

## PSYCHE

A JOURNAL OF ENTOMOLOGY.

[Established in 1874]

Vol. 10, No. 323

JUNE, 1903

## CONTENTS

A DECAD OF TEXAN FORMICIDAE.— <i>William Morton Wheeler</i> . . . . .	93
A NEW GENUS AND FOUR NEW SPECIES OF ASILIDAE.— <i>Charles W. Johnson</i> . . . . .	111
NEW ORTHOPTERA FROM NEVADA.— <i>Albert P. Morse</i> . . . . .	115
LIFE HISTORIES OF NORTH AMERICAN GEOMETRIDAE. XLI.— <i>Harrison G. Dyar</i> . . . . .	116
STUDIES FOR STUDENTS. III. ELEMENTARY STUDIES IN INSECT HISTOLOGY.— <i>Vernon L. Kellogg</i> . . . . .	118
THE HEMIPTERA DESCRIBED BY PHILIP REESE UHLER. III.— <i>Samuel Henshaw</i> . . . . .	122

PUBLISHED BY THE

CAMBRIDGE ENTOMOLOGICAL CLUB

CAMBRIDGE, MASS., U. S. A.

# PSYCHE.

## A DECAD OF TEXAN FORMICIDAE.<sup>1</sup>

BY WILLIAM MORTON WHEELER, AUSTIN, TEX.

### 1. ECITON (ACAMATUS) PAUXILLUM, sp. nov.

*Worker.* Length 1.75-2 mm.

Mandibles with a very prominent basal tooth. Head, including mandibles, fully twice as long as broad, occipital border slightly concave, posterior angles rather sharp, sides subparallel. Eyes completely absent. Antennal scape thick, not reaching half way to the posterior angle of the head, funiculus robust, first joint nearly as long as the second and third together, joints 2-6 distinctly broader than long; joints 7-9 about as wide as long. Thorax flattened dorsally, laterally compressed, with distinct mesoepinotal constriction; basal surface of epinotum flattened, longer than the declivity, with which it forms a rounded, obtuse angle. Petiole and postpetiole, whether seen from above or in profile, of similar size and form; each furnished with an anterior ventral tooth; petiole distinctly longer than the postpetiole, longer than broad, subelliptical from above; postpetiole not longer than broad, somewhat wider behind than in front. Gaster elongate elliptical, distinctly flattened dorso-ventrally. Legs short and robust. Claws simple.

Smooth and shining, especially the head and thoracic dorsum; sides of neck, meso- and metapleurae, together with the ventral surfaces of the petiole and postpetiole, distinctly and evenly reticulate. Mandibles, head and thorax with coarse but scattered piligerous punctures.

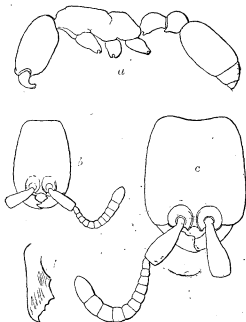


FIG. 1. a, *Eciton pauxillum*, sp. nov. Worker; b, head of same; c, head of *E. commutatum* Emery; d, mandible of same.

<sup>1</sup> Contributions from the Zoölogical Laboratory of the University of Texas. No. 49.

Body and appendages covered with sparse and rather long, suberect, yellow hairs.

Reddish yellow throughout except the mandibles, clypeus, and anterior border of the head which are more brownish.

Described from nine specimens taken at Austin, Tex., May 25, 1901; the only occasion on which I have seen this species. The insects were moving along under a stone in a small troop, all the members of which were very nearly of the same diminutive size. The species is evidently hypogaecic in its habits like *E. coecum*, *nitens*, *commutatum*, etc.

It may be distinguished from all our North American Ecitons by its very small size, and from the species above mentioned by its very long, narrow head and the prominent, rather acute basal tooth of the mandibles. Mexican specimens which I assign to *E. commutatum* Emery have the tooth broad and blunt and the head is fully two thirds as broad as long.

## 2. *PONERA INEXORATA*, sp. nov.

*Worker.* Length 2.75-3.25 mm.

Mandibles long and flattened, with concavely sinuate lateral borders and about a dozen teeth, which are small and indistinct towards the base, but longer and more pointed towards the tip of the blade. Head distinctly longer than broad with concave occipital margin and subparallel sides. Clypeus broadly rounded in front, convex in the middle. Antennae

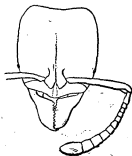


FIG. 2. *Ponera inexorata*, sp. nov.  
Head of worker.

rather slender, scape reaching to the posterior angle of the head, joints 2-5 of the funiculus fully as long as broad, the remaining joints longer than broad. Eyes very small, with at most 3-4 ommatidia in their longest diameter and situated about one fourth the distance from the anterior to the posterior border of the head. Thorax with very distinct promeso-notal and meso-epinotal sutures; pronotum broader than the succeeding thoracic segments, rounded, with rather sloping anterior angles; mesonotum convex; epinotum laterally compressed, its basal portion in profile horizontal and nearly straight, its declivity flattened, with rounded sides, not carinate. Petiole decidedly narrower than the first gastric segment, its anterior surface flattened dorsoventrally but distinctly convex from side to side; posterior surface flat in both directions, so that the segment when seen from above is somewhat semi-circular; seen from

behind the border of the node is nearly circular in outline. Gaster of the usual form. Legs moderately stout, each tibia with a pair of spurs, one of which is pectinated.

Surface of the body, especially the dorsal surface of the head, thorax, and petiole, shining. Mandibles with coarse, scattered, piligerous punctures. Head covered rather densely but not confluent with coarse piligerous punctures or small foveolae. Pronotum with similar but smaller and sparser punctures; neck and mesonotum, finely corrugated above; meso- and

metapleurae similarly but more coarsely sculptured, subopaque. Petiole and gaster covered with piligerous punctures like those on the pronotum.

Whole body clothed with pale yellow, reclinate or appressed hairs, among which there are longer, more scattered, suberect hairs, especially on the thorax and abdomen.

Yellowish ferruginous throughout, mandibles, antennae, and legs somewhat paler. Epinotum, mesopleurae, and posterior gastric segments sometimes more reddish or brownish. Teeth of mandibles and anterior border of clypeus blackish.

*Female* (deälated). Length 3.25 mm.

Very much like the worker in form and coloration. Each ocellus with a small black spot at its margin. Head distinctly more opaque than in the worker, owing to a denser aggregation of the piligerous foveolae; the node is thinner antero-posteriorly and its anterior surface is very flat or even slightly concave from side to side. Alar insertions black.

Described from two females and numerous workers taken at Austin, San Angelo, and Fort Davis. The species is not common. It occurs in colonies not exceeding a dozen individuals and usually much smaller. I have found it only on dry hill-slopes under rather small stones (limestone in central Texas, volcanic rock in the Trans-Pecos).

*P. inexorata* is closely related to *P. distinguenda* Emery of Venezuela, Brazil, and Paraguay, but is smaller and yellowish ferruginous in color instead of fuscous.

### 3. PHEIDOLE TITANIS, sp. nov.

*Soldier*. Length 7.25–8 mm.

Head proportionally small, hardly larger than the gaster, a little longer than broad, excluding the mandibles, subcordate, somewhat broader behind than in front, with prominent rounded posterior corners; posterior border deeply excised in the middle. A deep groove extends from this excision to the frontal area. Mandibles robust, convex, with flattened, edentulous, and nearly straight blades which terminate in two prominent apical teeth. Clypeus short, its anterior border deeply excised in the middle, feebly and sinuately concave on either side; median surface rather flat and depressed. Frontal area triangular, as long as wide. Frontal carinae long, diverging, continued backward nearly to the middle of the head. Antennae very small, scape distinctly flattened but hardly incrassated, reaching only to a little beyond the posterior orbit; funiculus slender, its joints all decidedly longer than broad, club very short and indistinctly marked off from the remainder of the funiculus. Eyes moderate, round, at about one third the distance from the anterior to the posterior border of the head.

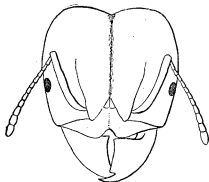


FIG. 3. *Pheidole titanis*, sp. nov. Head of soldier.

Thorax robust; pronotal angles obtusely rounded; mesoepinotal constriction rather deep; epinotal declivity concave; spines robust, pointed, longer than broad at the base and farther apart than long; slightly curved downwards at their tips. Petiole pedunculate, seen from above constricted near the middle; in profile the dorsal surface is concave in front, convex on the anterior surface of the node, posterior declivity straight and abrupt; upper margin of node distinctly concave in the middle when seen from behind. Postpetiole transversely elliptical from above, nearly twice as broad as long and fully twice as broad as the petiole, with distinct but not very prominent lateral angles near the middle; in profile the dorsal surface is very convex, the ventral surface much more flattened. Gaster elongate elliptical, rather large. Legs long, femora conspicuously incrassated in the middle, the tibiae towards their distal ends.

Mandibles smooth and shining, with a few scattered piligerous punctures and some pronounced striae on the outer basal margin. Clypeus shining in the middle, more opaque at the sides which are coarsely longitudinally rugose. There is a prominent median ruga. Frontal area shining, with a median carinula. Head subopaque covered with rather coarse, parallel, longitudinal rugae over the anterior three quarters, posterior fourth smooth and shining, with a few scattered and shallow foveolae. Spaces between the rugae filled with minor reticulations which extend back somewhat beyond the ends of the main rugae on to the smooth occipital surface. Thorax subopaque, pro- and mesonotum more shining, pronotum and sides of mesonotum with several sharp transverse rugae. Mesopleurae and whole epinotum coarsely punctate rugulose. Petiole and postpetiole opaque, punctate rugulose throughout. Gaster hardly shining, as its surface is finely reticulate and irregularly and rather densely punctate; only the basal portions of the segments where they are overlapped by preceding segments when the gaster is not distended, are smooth and shining. Antennae and legs smooth and shining, scape, tibiae, and femora with scattered piligerous punctures.

Whole insect covered with rather long, coarse, yellow hairs, which are erect or suberect on the body, antennal scape, and legs, but shorter and less conspicuous on the funiculus and tarsi.

Rich ferruginous red, thorax and petiole somewhat darker, edges of mandibular blades, anterior border of clypeus, epinotal spines and gaster black, the posterior edges of the gastric segments yellowish, the basal half of the first gastric segment sometimes ferruginous.

*Worker.* Length 4-4.5 mm.

Head, excluding the mandibles, as broad as long; posterior angles rounded. Mandibles with two prominent apical teeth and the remainder of their blades finely crenulate. Clypeus short, its anterior border straight, faintly and sinuately excised in the middle, posterior median surface strongly convex. Frontal area triangular, rather indistinct. Antennae slender, scape slightly thickened distally, extending beyond the posterior corner of the head to a distance about one third of its length; funiculus with all its joints distinctly longer than broad, joints 2-7 subequal, fully twice as long as broad; club appearing 4-jointed as the 8th joint forms a transition between the basal and terminal joints. Thorax much like that of the soldier, but with less robust and narrower prothorax; epinotal spines more slender, straight and pointed. Petiole slender, more than twice as long as broad, node rounded, hardly transverse. Postpetiole as long as broad, campanulate, nearly twice as broad as the petiole. Gaster and legs of the usual shape.

Smooth and shining; mandibles, head, and gaster with sparse piligerous punctures; head in front of eyes longitudinally rugose as is also the region between and next to the

frontal carinae. Mesopleurae, epinotum, ventral and lateral surfaces of the petiole and postpetiole subopaque, reticulate punctate.

Pilosity similar to that of the soldier but less abundant.

Black or very dark reddish brown. Mandibles, anterior portion of head, pro- and mesopleurae reddish yellow. Antennae and legs reddish yellow, scape and femora darker.

Described from numerous specimens taken in the Paisano Pass, Brewster County, by myself, and in the Chisos Mts. by Judge O. W. Williams. The single nest found in the Paisano Pass was between huge immovable boulders embedded in the soil, so that I could secure only the workers, but Judge Williams obtained great numbers both of the soldiers and workers from a large nest under a stone near the foot of the Chisos.

*Ph. titanis* differs from all the other species of PHEIDOLE known to occur in the United States in its great size. It belongs to the group of species comprising *Ph. hyatti* Emery and *Ph. crassicornis* Emery. The soldier of *Ph. titanis* resembles the soldiers of both of these species in the relatively small size and sculpturing of the head, and the flattened antennal scape, but differs in the peculiar, short, and indistinct antennal club and the deep median excision of the anterior clypeal border.

#### 4. PHEIDOLE TEXANA, sp. nov.

*Soldier.* Length 4-5 mm.

Head rather small, but larger than the gaster, a little longer than broad, excluding the mandibles, cordiform, distinctly broader behind than in front, with deeply excised posterior border, rounded posterior angles, and a rather broad median furrow extending from the frontal area to the occiput. Frontal area triangular, about as broad as long. Clypeus short, its anterior border flattened and rather deeply notched in the middle. Frontal carinae short, prominent. Eyes moderate, well in front of the middle of the sides of the head. Mandibles large, convex with flattened blades, which are finely denticulate basally, with two prominent terminal teeth. Antennal scape broadened and flattened, distinctly concave on its anterior surface, hardly reaching to half the distance between the eye and the posterior corner of the head, funiculus with all its joints longer than broad, the last three joints forming a well-developed club. Thorax not very robust, pronotal angles rounded, pronotum rather flattened above; mesonotum angular, projecting upward, concave in the middle when seen from behind; separated by a distinct suture from the pronotum and by a more distinct constriction from the epinotum. The latter has its basal surface and declivity both in the same plane, gradually sloping backwards and distinctly concave; spines well developed, blunt, longer than broad at

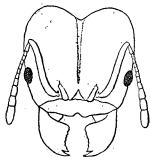


FIG. 4. *Pheidole texana*, sp. nov. Head of soldier.

their bases and much farther apart than long, directed upwards, backwards, and outwards. Petiole in profile with long concave ascending nodal surface and convex ventral surface; the node is acute, transverse, with median emargination and short, concave posterior declivity; seen from above the petiole is small, not more than one and a half times as long as broad, broader behind than in front, constricted in the middle, with rather acute posterior angles. Postpetiole three times as broad as the petiole and more than twice as broad as long, with a small, acute projection in the middle on either side; in profile the dorsal surface is evenly convex and longer than the more uneven ventral surface. Gaster rather large, elliptical, flattened on its dorsal surface. Legs of moderate length and of the usual conformation.

Mandibles shining, indistinctly reticulate, covered with large piligerous punctures. Clypeus shining in the middle, faintly reticulate like the mandibles, on either side with a few coarse longitudinal rugae. Frontal area impressed, shining, with a few longitudinal rugae on either side. Head opaque throughout, covered with coarse reticulate rugae enclosing more finely reticulate interrugal spaces; the main rugae with distinctly longitudinal trend only on the front and cheeks. Cephalic furrow crossed by numerous transverse rugae especially towards the occipital border. Antennal scape shining, finely reticulate. Thorax, petiole, and postpetiole opaque like the head, but more finely reticulate rugose; only the dorsal surfaces are roughened, the pro- and mesonotum being crossed by a few coarse and irregular transverse rugae. Postpetiole with about eight shallow longitudinal impressions on its dorsal surface. Gaster and legs shining, their surfaces finely and regularly reticulate.

Body and appendages invested with rather long, more or less erect, tawny hairs.

Rich ferruginous red throughout; legs and antennae but little paler than the body; gaster somewhat infuscated posteriorly, anteriorly pellucid and in many specimens appearing as if filled with a wine-red fluid so that this region has a more brilliant color than the remainder of the body.

*Worker.* Length 2.5-3. mm.

Head but little longer than broad, its posterior border rather straight but not concave. Mandibles rather slender, 8-toothed, the first, second, and fourth teeth from the apex being longer than the others. Clypeus sinuately emarginate in the middle, with a median and on either side two lateral longitudinal ridges or carinulae. Frontal area triangular, as long as broad, with a median longitudinal ridge. Antennal scapes not flattened, distinctly enlarged at their distal ends; exceeding the posterior angles of the head by somewhat more than twice their transverse diameter. Pronotum rounded above and on the sides, spheroidal; mesonotum projecting upwards as a transverse ridge which is not concave in the middle when seen from behind, separated by distinct constrictions from the pro- and epinotum. The latter shaped like that of the soldier. Petiole slender, fully twice as long as broad, in other respects like the corresponding segment of the soldier. Postpetiole nearly three times as broad as the petiole, hardly twice as broad as long, its sides and dorsal surface rounded, the angles of the former being very indistinct.

Sculpture like that of the soldier but feebler, especially on the head. Pilosity and color, too, as in the-soldier, except that there is a large black spot on the vertex in many specimens.

Described from numerous soldiers and workers. These were taken from four nests, the only ones I have seen during as many years. They were all situated in

different parts of Travis County, Texas, in open, sunny grass-lands. Each nest was surmounted by a regular moundlet about four inches in diameter and consisting of coarse pellets of earth. The ants are very pugnacious but their stings are feebly developed.

*Ph. texana*, like the preceding species, belongs to the group comprising *Ph. hyatti* and *Ph. crassicornis*, on account of the flattening of the antennal scape in the soldier, the relatively small head, etc. *Ph. texana*, however, is readily distinguished by the coarse reticulation covering the whole head and leaving no polished posterior angles, and by the antennal scape which is intermediate in length between that of *Ph. hyatti* and *Ph. crassicornis*.

##### 5. *MACROMISCHA SUBDITIVA*, sp. nov.

*Worker*. Length 2-2.5 mm.

Head somewhat longer than broad, rounded at the posterior angles and convex above. Mandibles rather small, with three acute apical and three much smaller basal teeth. Clypeus short, broadly rounded in front, convex in the middle, with a prominent median carina running its full length and continued over the frontal area. Frontal area large, triangular, longer than broad. Antennae long, 12-jointed; scape extending beyond the posterior corner of the head to a distance equal to twice its breadth; first funicular joint nearly as long as the three succeeding joints together, joints 2-8 about as long as broad, two penultimate joints subequal, together as long as the terminal joint. Thorax short and thick-set, dorsum in profile convex, evenly rounded; prothorax with broadly rounded angles, promesonotal suture very faintly, meso-epinotal suture somewhat more distinctly indicated. Epinotum armed with two stout spines, which are very close together at their bases but diverge strongly outward, upward, and backward; epinotal declivity concave. Petiole long, with a conspicuously elongated peduncle which passes very abruptly into the transverse node; the latter is much compressed antero-posteriorly when seen in profile, the anterior and posterior surfaces being flattened and perpendicular, the summit of the node narrow and rounded; when seen from behind, the edge of the node is horizontal and nearly straight. There is a small but distinct tooth on the ventral surface of the petiole near its anterior end. Postpetiole from above but little wider than the node of the petiole, fully twice as broad as long, rounded oblong; in profile it is nodiform, very convex dorsally, in both views showing a decided constriction at its insertion into the gaster. Gaster of the usual shape, with a long, powerful sting. Legs of the usual shape, with the femora conspicuously incrassated in the middle. There are no spurs on the middle and hind tibiae.



FIG. 5. *Macromischa subditiva*, sp. nov. Worker.



Head, including the mandibles and clypeus, subopaque, sharply longitudinally rugose; the rugae connected by subsidiary reticulate rugae on the base of the mandibles, cheeks, and sides of the head. Clypeus and frontal area more shining, the former with few rugae, especially near the middle. Thoracic dorsum shining, pleurae and epinotum subopaque. Whole surface of thorax reticulate rugose, regularly in the opaque regions, more irregularly and more longitudinally on the shining dorsal surface. Petiole and postpetiole shining above, reticulate and subopaque on the ventral and lateral surfaces. Gaster very smooth and shining. Legs more opaque, finely but distinctly reticulate.

Head, thorax, and abdomen beset with sparse, erect, obtuse, silvery white hairs; antennae and legs with minute, appressed, pointed hairs of the same color.

Body black or, in immature specimens, very dark brown; mandibles, antennae, legs and epinotal spines, tip of gaster, and sting yellow, scape and club of antennae, bases of epinotal spines, and greater portion of femora and tibiae infuscated.

A rare species described from a few specimens taken along Walnut Creek, near Austin (May 12, 1901), and at New Braunfels (June 3, 1901). In the former locality they were found walking on the leaves of bushes, in the latter on a dead limb lying on the ground. I did not succeed in finding the nest which is probably small and not very populous.<sup>1</sup>

This is the first species of *MACROMISCHA* to be described from the United States, and I am not altogether sure that it is to be assigned to this neotropical genus. It certainly resembles some of our species of *LEPTOTHORAX* with 12-jointed antennae, like *L. obturator* Wheeler. Emery maintains that *MACROMISCHA* differs from the other myrmicine genera in the following characters: 1. the petiole has a long peduncle; 2. the postpetiole is campanulate and attached by its whole breadth to the first gastric segment; 3. the thoracic dorsum is continuous, *i. e.*, without sutures or constrictions; and 4. there are no spurs on the middle and hind tibiae. *M. subditiva* does not present the second and third of these characters, but it certainly differs from our species of *LEPTOTHORAX* in the remarkable shape of the petiole.

#### 6. *ATTA* (*TRACHYMYRMEX*) *TURRIFEX*, sp. nov.

*Worker.* Length 3-3.75 mm.

Mandibles long, pointed, 7-8 toothed. Clypeus short, with a deep excision in the middle of its anterior border. Head with pointed posterior angles, deeply excised occipital margin and rather straight, subparallel sides. Frontal carinae large, suboblong, conspicuously concave on their upper surfaces, and continued back to the posterior angles of the head as prominent crenated ridges, on either side bounding a marked concavity for the recep-

<sup>1</sup> Since the above was written I have succeeded in finding a single nest of *M. subditiva*. This was a small cell excavated in the bark of a huge willow (*Salix nigra*) near Austin. The cell contained about twenty workers and resembled in every way the nests of our corticolous species of *LEPTOTHORAX*.

tion of the antennal scape when folded back. Just behind the posterior angle of the head there is a prominent projection. Antennal scape robust, hardly extending beyond the posterior corner of the head; funiculus long, its joints all distinctly longer than broad. Pronotum and mesonotum high, arched dorsally above the epinotum which is separated by a deep constriction from the mesonotum and has its basal surface of about the same length as its abrupt and somewhat concave declivity. Sides of mesonotum carinate. The thorax is armed with the following prominent spines and protuberances: pronotum with two spines on either side and a double tubercle in the mid-dorsal line; mesonotum with a large blunt tubercle at either anterior corner and farther back a pair of smaller spine-like tubercles which are much closer together than the anterior pair; epinotum with a pair of prominent spines, the bases of which are continued forward as ridges bordering the basal dorsal surface of the epinotum. These spines are longer than their distance apart at their bases, and are directed outwards, backwards, and upwards. Petiole in profile depressed, the pedicel rising gradually into the somewhat rounded node, sides subcarinate, ventral surface with a small acute tooth at the extreme anterior end; seen from above the node is oblong, distinctly longer than broad. Postpetiole nearly twice as broad as long, its anterior border rounded, its posterior border straight, with a large depression in the mid-dorsal line; the sides are distinctly carinate. Gaster somewhat oblong when seen from above, slightly flattened; in profile more pyriform, sides faintly carinate. Legs of the usual conformation.

Mandibles subopaque, finely striated, the edges of the blades with a row of shallow, elongate depressions. Body, legs, and antennal scape opaque, roughened, covered with small tubercles, which are more or less connected by low confluent ridges on the head and thorax. Even the thoracic spines are covered with these tubercles. On the gaster they are very uniformly distributed. Funicular joints smooth.

Hairs rather uniformly covering the body, legs, and antennal scape, brown, short, and more or less recurved or hooked.

Rich reddish brown throughout; teeth of mandibles and dorsal surface of head between the frontal carinae, black. In old specimens the body is much darker in color and its roughened portions are overlaid with a bluish bloom which is intensified when the insect is boiled in caustic potash. Young specimens are paler yellowish brown.

*Female.* Length 4-4.5 mm.

Very similar to the worker in the structure of the head, pedicel, gaster, and appendages. Pronotum with a prominent tubercle on either side, mesonotum and paraptera flat, without

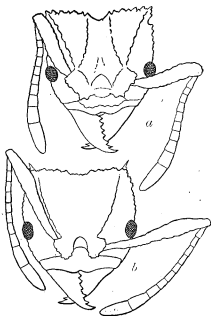


FIG. 6. a, *Atta* (*Trachymyrmex*) *turritex*, sp. nov. Head of worker. b, *A. (T.) septentrionalis* McCook. Head of worker.

spines or prominent tubercles; scutellum continued back as a pair of flat, triangular projections. Spines on the epinotum very robust. Wings fully 5 mm. long; extending far beyond the tip of the gaster, yellowish white, opaque, like ground glass; veins brownish, insertions black.

I have taken this new fungus-growing ant in the following localities in Texas: Fort Stockton, Pecos County; Del Rio, and Langtry, Valverde County; Marfa, Presidio County; Marble Falls, Burnet County and in many places in the vicinity of Austin, Travis County. It is nowhere very abundant and is easily overlooked on account of its extremely retiring disposition. Its nests and mushroom gardens, which I hope to describe at length in another place, are similar to those of *Atta septentrionalis* McCook. The entrance to the nest is very often surmounted by a peculiar turret, sometimes  $1\frac{1}{2}$  inches high and built of little twigs, leaves, etc.

*Atta turrifex* is a well-marked species. The worker differs from the worker of *A. septentrionalis* and the Mexican *A. saussurei* Forel in the following characters: The antennal scape is much shorter, hardly reaching beyond the posterior angle of the head, the lobes of the frontal carinae are broader and more concave, the posterior angles of the head are more acute, the sides of the head are straight and not rounded. The spines on the pro- and mesonotum are longer and of a different conformation, the postpetiole is conspicuously shorter, the general color of the body is darker, and there is no dorsal black band on the gaster. The characters of the head alone, as shown in the accompanying camera sketches of *A. turrifex* and *A. septentrionalis*, will suffice to separate the species at a glance. There are corresponding differences between the females of the two species.

As I have at last discovered *A. septentrionalis* in Texas (at Milano and Denton), it is clear that Buckley's name *A. tardigrada*, usually applied to this species, should be given up, since there is no way of deciding to which of the two species, his very inadequate description refers.

#### BRACHYMYRMEX NANELLUS, sp. nov.

*Worker.* Length 1 mm.

Mandibles 5-toothed, median tooth minute. Head about as broad as long, clypeus broadly rounded in front, its anterior border with a sinuous impression on either side. Antennal scape reaching to the posterior corner of the head, funiculus rather short and thick, joints 2-6 not longer than broad. Eyes with rather large ommatidia of which there are only about six in the maximum diameter. Maxillary palpi short, the three terminal joints less than one and a half times as long as broad. Promesonotal and mesoepinotal sutures distinct, the latter deeper, very conspicuous, and constricted. Petiole seen from behind, oblong but little higher than broad.

Whole body smooth and shining, gaster somewhat more opaque.

Clothed with delicate, appressed, yellowish hairs; on the clypeus and mandibles the hairs are longer and suberect. Each gastric segment bears on its posterior edge a row of prominent hairs.

Pale yellow, dorsal surface faintly tinged with brown; teeth and edges of mandibular blades black.

*Male.* Length 1 mm.

Mandibles spatulate, their rounded, edentulous blades not meeting with their tips. Clypeus short, with straight anterior border. Antennal scape slender, reaching a little beyond the posterior angle of the head, funiculus with basal joint twice as long as broad and more robust than any of the succeeding joints, joints 2 and 3 hardly longer than broad, joints 4-8 less than one and one half times as long as broad, terminal joints slender, a little shorter than the three preceding joints together. Mesonotum large, overarchng the small head, so that it is not seen when the insect is viewed from above. Epinotum flattened. Petiole rather long and thick, anterior surface of node somewhat concave, posterior surface longer and like the ventral surface, convex. Outer genital appendages robust, rounded.

Surface smooth and shining, gaster somewhat more opaque.

Pilosity like that of the worker. There are two widely separated, prominent bristles on the disc of the scutellum. Genital appendages fringed with prominent hairs. Wings microscopically pilose, the posterior pair especially fringed along their anal borders with rather long white hairs.

Pale yellow, head brown especially in the ocellar region. Wings and their nervures colorless.

Described from one male and a dozen workers taken under stones in a rather dry open place at Austin, May 25, 1901. The species is certainly rare in central Texas.

*B. nanellus* is closely related to *B. heerii* Forel subsp. *depilis* Emery, the only other member of the genus known to occur in the United States. The worker *nanellus* is distinguished by its much smaller size (*B. heerii depilis* measures 1.5-2 mm.), the shorter funicular joints and maxillary palpi, and the much paler color (*depilis* is distinctly brown). The male is also much paler in color than the male of *depilis*. It is possible that *nanellus* may have to be reduced to the rank of a subspecies of *heerii*, when the various species of the extremely difficult American genus *BRACHYMYRMEX* are subjected to a careful comparative study.

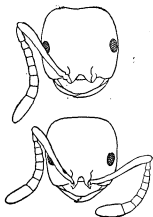


FIG. 7. a, *Brachymyrmex heerii* Forel. subsp. *depilis* Emery. Head of worker. b, *B. nanellus*, sp. nov. Head of worker.

## 8. PRENOLEPIS MELANDERI, sp. nov.

*Worker.* Length 2-2.5 mm.

Mandibles 6-toothed, with oblique blades; third and fifth tooth from the apex distinctly smaller than the others. Clypeus convex, hardly carinate, its anterior border sinuately excised in the middle. Head, exclusive of the mandibles, about as long as wide, distinctly narrower in front than behind, occipital border feebly and sinuately excised. Antennae long, scape extending for somewhat more than a third of its length beyond the posterior corner of the head, all the joints of the funiculus distinctly longer than broad; joints 3-10 subequal. Thorax rather slender, dorsal surfaces of pro- and mesonotum somewhat flattened, the sides of the former rounded. Mesoepinotal suture distinct but not flattened at the bottom, much narrower than the distance between the pair of metathoracic stigmata. Epinotum rounded above and on the sides, its declivity flattened or somewhat concave. Petiole small and narrow, cuneate in profile, inclined forward, its ventral surface convex, the edge of the node seen from behind rounded rather than horizontal. Gaster and legs of the usual conformation.

Body smooth and shining, legs and antennae subopaque.

Antennae and legs covered with delicate appressed, whitish pubescence; head, thorax,

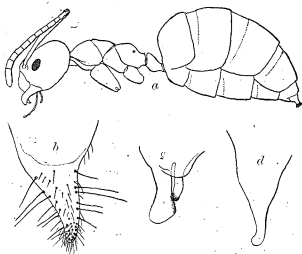


FIG. 8. *a*, *Prenolepis melanderi*, sp. nov. Worker; *b*, external; *c*, median, *d*, inner genital appendages of male.

and gaster with stout, erect, subobtuse hairs of a brownish or black color in certain lights, except on the posterior portion of the head where they are white. Antennal scape, femora, and tibiae also furnished with more scattered, shorter, suberect hairs.

Yellow; dorsal surface of head, thoracic dorsum, pleurae, and gaster more or less

infuscated. In many specimens the gaster and head are dark brown or black; usually in mature specimens the gaster is darker than the head, the head darker than the thorax.

*Female.* Length 3-4 mm.

Mandibles 6-toothed, shaped like those of the worker. Clypeus very prominent in the middle, subcarinate, its anterior border feebly excised in the middle. Head, exclusive of the mandibles and clypeus, distinctly broader than long, and narrower in front than behind. Antennae like those of the worker. Thorax broader than the head, with flattened mesonotum and scutellum. Epinotum regularly convex above, its basal surface very short, its declivity somewhat flattened but not concave. Petiole like that of the worker. Gaster of the usual shape in females of *PRENOLEPIS*.

Surface of body and appendages opaque, except the declivity of the epinotum which is polished and shining.

Grayish yellow pubescence covering the insect more abundant and longer than in the worker. The long hairs, corresponding to those of the worker, are relatively shorter, less obtuse and of a pale color like the pubescence.

Body dark brown, antennae, legs, lower surface and sides of head, mesonotum, and scutellum reddish. The coxae, femora, and tibiae are sometimes slightly infuscated. Wings yellowish gray, rather opaque with yellowish brown nervures and stigma.

*Male.* Length 1.5-2 mm.

Mandibles well developed, but edentulous. Clypeus like that of the worker but shorter and with more distinct median incisure. Head, except for the much larger eyes and the ocelli, somewhat like that of the worker in shape. Antennal scape reaching for nearly half its length beyond the posterior corner of the head. Mesonotum broad, rounded and convex in front, but depressed just in front of the very convex scutellum. Basal surface of epinotum rather long, flattened; the declivity perpendicular. Petiole thicker and blunter above than in the worker. Outer genital appendages triangular, tapering, longer than broad, a little recurved so that their anterior border is convex, the posterior concave. Median appendages bifurcated, short, the inner ramus broadly club-shaped at the apex, papillose on its external border; lateral ramus digitiform, much shorter than the inner ramus, with its end papillose. Inner genital appendages long, triangular, with a rounded knob at the somewhat recurved apex. When *in situ* the tips of these appendages may project beyond the larger external pair. Legs long and slender, wings like those of the female.

Head, thorax, and abdomen smooth and shining, the surface delicately reticulate. Antennae and legs more opaque.

Pubescence and pilosity as in the worker, except that the erect hairs on the body are relatively shorter, more tapering, and less conspicuous. The hairs on the outer genital appendages, though numerous, are not more prominent than those on the gaster.

Coloration like that of the worker except that the gaster is darker, and usually quite black; the head is dark brown, the thorax somewhat paler. Antennae and legs more or less infuscated. Outer genital appendages dark brown, median and inner pairs pale yellow. Wings colored like those of the female but with very pale and indistinct nervures.

Described from numerous specimens of all the sexual forms from the following localities: San Angelo, Tom Green County; Austin and environs, Travis County; New Braunfels, Comal County, and Fort Davis, Jeff Davis County. I have also received this species from Mr. C. H. Tyler Townsend who collected it in Mexico on the Rio Santa Maria and at Cerro del Chilicote, Chihuahua.

The species, which I take pleasure in dedicating to my former pupil, Mr. A. L. Melander, is very common in central and Trans-Pecos Texas, where it occurs under stones, usually in rather damp localities but not infrequently also on the sun-scorched limestone hills at an altitude of 1000-5000 ft. Its colonies are seen most frequently during the moister seasons of the year and like the colonies of most of our Texan Camponoti contain males and winged females during the winter and early spring months (January to April 1st).

*P. melanderi* can be readily distinguished from *P. parvula* Mayr in having prominent hairs on the antennal scape in the worker, and in the male by the characteristic genital appendages which are very unlike those of the male *parvula*.

The species above described may be identical with the form described by Buckley as *Formica terricola*, but as this cannot be proved with certainty, since he would be a bold man who would pretend to recognize a particular species of so difficult a genus as *PRENOLEPIS* among the descriptions of that author, I have decided to reject Buckley's name and redescribe the species.

*PRENOLEPIS BRUESII*, sp. nov.

*Worker.* Length 2.5-2.75 mm.

Mandibles 6-toothed; third and fifth tooth subequal, much smaller than the others. Clypeus very convex but not carinate in the middle, its anterior border sinuately excised. Head, excluding the mandibles, distinctly longer than broad, not narrower in front than behind, occipital margin feebly excised. Antennal scape reaching to somewhat more than a third of its length beyond the posterior corner of the head; all the funicular joints longer than broad. Thorax rather robust, pro- and mesonotum flattened above, the former broad and rounded on the sides; mesoepinotal suture pronounced but without a flat bottom, decidedly narrower than the distance between the pair of metathoracic stigmata. Epinotum evenly rounded, its most prominent portion lower than the mesonotal surface, its declivity somewhat flattened. Petiole robust, inclined forward, convex on its ventral surface, its node rather blunt in profile, its upper border horizontal when seen from behind and with rather square corners. Gaster and legs of the usual conformation.

Very smooth and shining, legs and antennae subopaque, gaster delicately reticulate under a high magnification.

Legs and antennae clothed with fine, white, appressed pubescence; head, thorax, and gaster with erect brown hairs which are distinctly longer, more tapering, and more numerous at least on the head, antennal scape, and gaster than in *P. melanderi*.

Yellowish brown, head somewhat darker above, gaster blackish, legs and antennae yellow.

*Female.* Length 3.75 mm.

Resembling the female of *P. melanderi* but more robust and of a different color. The head is somewhat shining. Mouth, sides of clypeus, and mandibles pale yellow, the last with black teeth. Head, thorax, and gaster black; mesonotum, borders of the scutellum, and

insertions of wings reddish in some specimens. Antennal scape, coxae, femora, and tibiae black, articulations of the legs, the tarsi, and funiculus yellow. The gray pubescence and the erect hairs, which are also gray, are prominent and give the whole ant a silky appearance. Wings grayish hyaline, rather opaque, with distinct gray nervures; stigma inconspicuous.

*Male.* Length 2.75–3 mm.

Mandibles well developed, but edentulous. Clypeus and head shaped like those of the worker except for the ocelli and the much larger eyes. Antennae long and slender, scape projecting for about half its length beyond the posterior angles of the head. Mesonotum rather narrow, convex and rounded in front, flattened in the prescutellar region. Scutellum convex. Epinotum with basal surface and declivity flattened, forming a rounded angle at

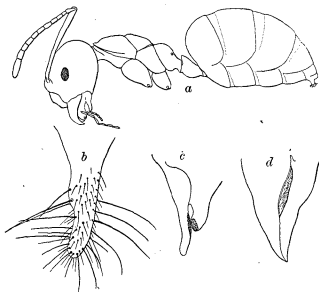


FIG. 9. *a*, *Prenolepis brucei*, sp. nov. Worker; *b*, external, *c*, median, *d*, internal genital appendages of male.

their juncture. Petiole robust, thick antero-posteriorly, in profile broadly rounded above convex below; the summit of the node seen from behind is very slightly arcuate, nearly horizontal. Gaster long, compressed dorso-ventrally. External genital appendages very long, digitiform, rounded at the tip. Median appendages bifid; inner ramus very long and slender with its papillose surface on the side and some distance from the tip; outer ramus short, thick, somewhat curved, with an extensive papillose surface at its end. Inner genital appendages long, triangular, with a prominent longitudinal fold near the middle and a very slightly recurved point. Wings of the usual shape. Legs rather long.

Head, thorax, and gaster shining, mesonotum more opaque, being very finely and evenly punctate. Legs and antennae subopaque.

Legs and antennae clothed with fine gray pubescence, as are also the head and thorax.



The long erect hairs are distributed as in the worker, but are shorter and less conspicuous. On the outer genital appendages there are numerous erect hairs, which, however, are less robust and shorter than the hairs on the gastric segments.

Head, thorax, and abdomen deep black as are also the mandibular teeth, and the femora and tibiae except the articulations which are yellow. Mandibles, sides of clypeus, and tarsi yellow. Antennae and genital valves more or less infuscated. Wings grayish hyaline with gray nervures, more indistinct than in the female.

This species which I dedicate to my former pupil, Mr. C. T. Brues, is described from numerous males, females, and workers which I collected Dec. 19th, 1901, in Fresno Cañon, in the southern part of Presidio County, Texas. The nests, more extensive and populous than those of *P. melanderi*, were found under piles of stones, just above high water mark where the soil retains some moisture during the dry season. *P. bruesii* is sufficiently distinct from all the described American *PRENOLEPIS* on account of the peculiar configuration of the male genital appendages.

#### 10. CAMPONOTUS TEXANUS, sp. nov.

*Worker maxima.* Length 10-12 mm.

Mandibles small, convex, 5-toothed. Head large, about as broad as long, distinctly wider behind than in front, sides moderately convex, posterior border straight when the head is viewed squarely from the front. Clypeus a little longer than broad, not keeled in the middle, its anterior border with a shallow median excision bounded on either side by a prominent tooth. Frontal area small, obscure. Frontal carinae prominent, lyrate. Front with a median groove accentuated by a longitudinal depression towards its posterior end. Cheeks rather uneven, with a deep impression or dimple at the lateral border of the clypeus. Eyes broadly elliptical, flattened. Antennal scape barely reaching the posterior corner of the head, slender and slightly flattened at the base, thicker and more cylindrical towards the distal end; funiculus slender, consisting of joints more than twice as long as wide. Thoracic dorsum regularly arcuate in profile; pro- and mesonotum somewhat flattened dorsally, the former distinctly carinate along its anterior border; pleurae, especially the meso- and metapleurae compressed and flattened; epinotum with a short, slightly concave declivity passing evenly into the rounded basal portion. Sutures, except those between the meso- and metapleurae, distinct. Petiole thick, with convex anterior and very flat posterior surfaces, which form a rather abrupt angle at the summit of the node. From behind the margin of the node is evenly arcuate, passing without angles into the lateral contours. Gaster and legs of the usual shape.

Surface of body finely shagreened, smooth and shining, especially the posterior corners of the head which are highly polished. Head covered with punctures, which are coarse and conspicuous on the mandibles, clypeus, and cheeks but smaller and sparser on the remainder of the head, and especially on the posterior angles. Vertex with eight foveolate piligerous impressions in two rows of four each. Mesonotum with a few coarse piligerous punctures near the middle of its dorsal surface. Legs rather finely punctate.

Hairs on the body suberect, yellow, not abundant. On the head they are found as a row on the anterior border of the clypeus, scattered over the front and more abundant on the lower surface of the head. Mandibles with a few short hairs. Thorax with a few scattered hairs on the pro- and mesonotum and on the epinotal angle. Petiolar node fringed with a single row of hairs. Each gastric segment with two regular transverse rows, one near the base and the other near the posterior margin. There are a few scattered long hairs on the femora and tibiae and at the tip of the antennal scape; tibiae and tarsi with more numerous and smaller appressed hairs.

Head black; mandibles, clypeus, front and lower surface suffused with blood-red. Thorax and petiole rich yellowish red, the sutures of the former black. In some specimens the anterior surface of the petiole is more or less blackened. Gaster black, posterior edges of

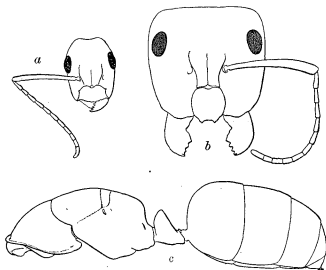


FIG. 10. *Camponotus texanus*, sp. nov. a, head of worker minor; b, head of worker maxima; c, body of worker maxima.

segments yellow, basal half of first segment and much of the venter rich yellowish red. Legs yellowish red, tibiae and tarsi of a somewhat deeper shade than the femora. Antennal scape, black, suffused with red, funiculus red.

*Worker media.* Length 9-10 mm.

Resembling the worker maxima throughout except in the smaller size and shape of the head, which is distinctly longer than wide, oblong, with subparallel sides. The blood-red color is somewhat more general on its anterior half. The antennal scapes extend to about one fourth their length beyond the posterior angles.

*Worker minor.* Length 8-9.5 mm. Closely resembling the maxima and media except in the size of the body and the shape and proportional size of the head, which is much longer than broad, with long, parallel checks, somewhat narrower posterior corners, and distinctly

concave posterior border. The five teeth of the more slender mandibles are more acute. The clypeus is subhexagonal, broader than long, and coextensive with the anterior border of the head; truncated and somewhat irregular at its anterior margin but not excised or toothed. Antennal scapes long and slender, not flattened at their bases, surpassing the posterior angles of the head by fully half their length. Eyes more narrowly elliptical and more convex than in the media and maxima. In the thorax the sutures bounding the metanotum are vague. There are no differences in color except that the antennal scapes are of a paler red.

*Female.* Length 12-12.5 mm.

Resembling the maxima and media, the head like the head of the latter, longer than broad, somewhat narrower in front than behind, with straight posterior border and subparallel sides. The structure of the thorax exhibits the usual sexual characters; the pronotum is prominently marginate in front, transversely convex behind, just in front of the pronounced pro-mesonotal suture. Mesonotum convex in front, flattened behind. Epinotum broad and rounded dorsally, with its declivity like that of the worker maxima. Edge of petiolar node excised in the middle.

Sculpture and coloration as in the maxima with the following differences: Mesonotum anteriorly with a large, elongate, median, black blotch and a similar blotch on either side over the parapsidal furrow. Alar insertions, scutellum, posterior borders of the paraptera, and the whole metanotum black; disc of scutellum blood-red; epinotum and pronotum slightly infuscated, the former along its sides, the latter along its posterior border. Both the anterior and posterior basal surfaces of the petiolar node more or less blackened. Wings hyaline, strongly suffused with yellow, tips more colorless; veins and stigma brownish yellow.

*Male.* Length 8-9 mm.

Head small, excluding the slender, edentulous mandibles, very nearly as broad as long; narrower through the cheeks, which are subparallel and slightly concave, than behind the eyes; evenly rounded posteriorly. Clypeus shaped somewhat like that of the worker minor, its anterior much broader than its posterior margin, without teeth or excision. Antennae long and slender, scape cylindrical, exceeding the posterior angle of the head by about two thirds of its length; first funicular joint slightly thicker than any of the succeeding joints. Thorax large and robust, conspicuously broad through the alar insertions, with very convex and rounded scutellum and epinotum. Petiole low, very thick antero-posteriorly, convex both on the anterior and posterior surfaces; edge of node rather blunt, in some specimens with a median excision, in others straight and horizontal. Gaster elongate elliptical, dorso-ventrally compressed. Genitalia small and slender, exerted. Legs long with prominent claws.

Body smooth and finely shagreened, but less shining than in the workers and female; mesonotum decidedly opaque. Mandibles shagreened, with a few large punctures along their outer edges. Cheeks and occiput sparsely and coarsely punctate or foveolate.

Pilosity scarce, as in the worker. Hairs on the gastric segments more scattered and irregular in their arrangement, long and prominent on the terminal segments. Antennal scape with a few long hairs at the tip.

Head black; mouth, mandibles, clypeus, and cheeks, and in some specimens also the front, yellowish red. Color of thorax as in the female, except that the three elongate black blotches on the mesonotum are more distinct. Petiole red, more or less clouded with black. Gaster black, genitalia and posterior edges of segments yellow. Wings like those of the female. Legs and antennae yellowish red.

Of this handsome species I have seen only four colonies, all taken in Travis County, Texas. Three of these were in oak logs that had been brought to Austin by the crackers from the mountain cañons northwest of the city. The remaining nest was found in Bull Creek Cañon in a crevice between two huge rocks. The males and winged females were taken in two of the nests Feb. 28, 1901, and March 25, 1902.

*C. texanus* appears to be closely related to *C. sayi* Emery of Arizona and Mexico. It is sufficiently distinct, however, both in size, coloration, shape of clypeus, petiole, etc.

April 15, 1903.

## A NEW GENUS AND FOUR NEW SPECIES OF ASILIDAE.

BY CHARLES W. JOHNSON, BOSTON, MASS.

### CERATURGOPSIS, gen. nov.

*Type.*—*Dasygogon cornutus* Wiedemann, Auss. Zw. Ins., I, 382, 1828.

This species has been placed by Baron Osten Sacken in the synonymy under *Ceraturgus cruciatus* Say. At the time of writing my paper on the Diptera of Florida (Proc. Acad. Nat. Sci. Phila., 1895, p. 303-304) I did not possess examples of Say's species, and as Wiedemann's species agrees quite closely in color-pattern I assumed that the synonymy was correct. Since obtaining specimens of *C. cruciatus* I was somewhat surprised to find a great difference in the antennae, so much so that *D. cornutus* cannot remain in the genus *Ceraturgus*. The antennae are so accurately described by Wiedemann, as to leave no doubt as to the species: "Erstes Fühlerglied rötlich, die folgenden schwarz: erstes und zweites von gleicher Länge; das dritte fast viermal so lang als eines von jenen, an der Spitze ein wenig verdickt; das erste der beiden Spitzenglieder sehr klein, fast verkehrt kegelförmig das letzte zusammengedrückt eirund, noch einmal so lang als das vorhergehende, mit einem sehr kurzen Seitendörnchen."

The terminal joint has a slight lobe-like projection bearing a small spine as shown in Fig. 3. In *C. cruciatus* the terminal joint is elongated and densely pubescent (Fig. 2). The rare *Ceraturgus aurulentus* Fabr., also resembles *C. cornutus*, but the form of the antennae (Fig. 1), hyaline wings, and smaller size readily separates it from that species. I have seen but three specimens of *C. aurulentus*, one taken by myself at Westville, N. J., August 21, 1892; the others